

**PATENT APPLICATION**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of

Docket No: Q77382

Yoshiaki SAKATANI, et al.

Appln. No.: 10/664,979

Group Art Unit: 1754

Confirmation No.: 4959

Examiner: Unknown

Filed: September 22, 2003

For: METHOD FOR PRODUCING TITANIUM OXIDE

**INFORMATION DISCLOSURE STATEMENT**  
**UNDER 37 C.F.R. §§ 1.97 and 1.98**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

In accordance with the duty of disclosure under 37 C.F.R. § 1.56, Applicant hereby notifies the U.S. Patent and Trademark Office of the documents which are listed on the attached PTO/SB/08 A & B (modified) form and/or listed herein and which the Examiner may deem material to patentability of the claims of the above-identified application.

1. EP 0 666 107, published August 9, 1995, to Ishihara Sangyo Kaisha, Ltd.
2. EP 0 675 086, published October 4, 1995, to Ishihara Sangyo Kaisha, Ltd.
3. EP 1 065 169, published January 3, 2001, to Sumitomo Chemical Co., Ltd.
4. EP 1 095 908, published May 2, 2001, to Sumitomo Chemical Co., Ltd.
5. EP 1 138 634, published October 4, 2001, to Sumitomo Chemical Co., Ltd.
6. EP 1 160 202, published December 5, 2001, to Sumitomo Chemical Co., Ltd.
7. EP 1 174 392, published January 23, 2002, to Sumitomo Chemical Co., Ltd.

SAKATANI et al.  
Appln. No. 10/664,979  
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8. EP 1 178 011, published February 6, 2002, to Sumitomo Chemical Co., Ltd.
9. EP 1 188 718, published March 20, 2002, to Sumitomo Chemical Co., Ltd.
10. EP 1 199 103, published April 24, 2002, to Sumitomo Chemical Co., Ltd.
11. EP 1 205 244, published May 15, 2002, to Kabushiki Kaisha Toyota Chuo Kenkyusho.
12. EP 1 219 569, published July 3, 2002, to Sumitomo Chemical Co., Ltd.
13. EP 1 279 643, published January 29, 2003, to Sumitomo Chemical Co., Ltd.
14. EP 1 285 953, published February 26, 2003, to Ecodevice Laboratory Co., Ltd.
15. FR 2 677 012, published December 4, 1992, to Rhone-Poulenc Chimie.
16. JP 10-67516, published March 10, 1998, to Saga Pref. Gov., with English Abstract.
17. JP 2000-140636, published May 23, 2000, to Sharp Corp., with English Abstract.
18. JP 2001-278627, published October 10, 2001, to Sumitomo Chemical Co., Ltd., with English Abstract.
19. JP 2001-96168, published April 10, 2001, to Kankyo Devise Kenkyusho YG, with English Abstract.
20. JP 2001-98220, published April 10, 2001, to Kankyo Devise Kenkyusho YG, with English Abstract.
21. JP 2003-171578, published June 20, 2003, to Sumitomo Chemical Co., Ltd., with English Abstract.
22. JP 2003-221230, published August 5, 2003, to Sumitomo Chemical Co., Ltd., with English Abstract.
23. JP 2003-48715, published February 21, 2003, to Sumitomo Chemical Co., Ltd., with English Abstract.
24. JP 62-207718, published September 12, 1987, to Taki Kagaku KK, with English Abstract.
25. M. Miyauchi et al., "Reversible wettability control of TiO<sub>2</sub> surface by light irradiation," *Surface Science*, 511, (2002), pp. 401-407.

SAKATANI et al.  
Appln. No. 10/664,979  
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26. R. Asahi et al., "Visible-Light Photocatalysis in Nitrogen-Doped Titanium Oxides", *Science*, Vol. 293, 7/13/01, pp. 269-271.
27. Shinri SATO, "Photocatalytic Activity of NO<sub>x</sub>-Doped TiO<sub>2</sub> in the Visible Light Region", *Chemical Physics Letters*, Vol. 123, No. 1,2, 1/3/86, pp. 126-128.
28. U.S. Patent Application Publication No. 2002-0012628 A1, published January 31, 2002, to Sawabe et al.
29. U.S. Patent Application Publication No. 2002-0021999 A1, published February 21, 2002, to Sakatani et al.
30. U.S. Patent Application Publication No. 2002-0051746 A1, published May 2, 2002, to Okusako.
31. U.S. Patent Application Publication No. 2003-0027704 A1, published February 6, 2003, to Sakatani et al..
32. U.S. Patent Application Publication No. 2003-0161784 A1, published August 28, 2003, to Okusako et al..
33. U.S. Patent Application Publication No. 2003-0220194 A1, published November 27, 2003, to Sakatani et al.
34. U.S. Patent Application Publication No. 2003-0236317 A1, published December 25, 2003, to Sakatani et al.
35. U.S. Patent No. 5,011,674, issued April 30, 1991, to Yoshimoto et al.
36. U.S. Patent No. 6,013,372, issued January 11, 2000, to Hayakawa et al.
37. WO 00/10921, published March 2, 2000, to Showa Denko Kabushiki Kaisha, with English Abstract.
38. WO 00/18686, published April 6, 2000, to Tao, Inc., with English Abstract.
39. WO 01/56928, published August 9, 2001, to Ecodevice Laboratory Co., Ltd., with English Abstract.
40. WO 02/40609, published May 23, 2002, to Ecodevice Laboratory Co., Ltd., with English Abstract.
41. WO 96/29375, published September 26, 1996, to Toto Ltd., with English Abstract.

SAKATANI et al.  
Appln. No. 10/664,979  
INFORMATION DISCLOSURE STATEMENT

One copy of each of the listed documents, other than any U.S. patents and patent publications, is submitted herewith.

The present Information Disclosure Statement is being filed: (1) No later than three months from the application's filing date; (2) Before the mailing date of the first Office Action on the merits (whichever is later); or (3) Before the mailing date of the first Office Action after filing a request for continued examination (RCE) under §1.114, and therefore, no Statement under 37 C.F.R. § 1.97(e) or fee under 37 C.F.R. § 1.17(p) is required.

The submission of the listed documents is not intended as an admission that any such document constitutes prior art against the claims of the present application. Applicant does not waive any right to take any action that would be appropriate to antedate or otherwise remove any listed document as a competent reference against the claims of the present application.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account. A duplicate copy of this paper is attached.


Respectfully submitted,

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WASHINGTON OFFICE

**23373**

CUSTOMER NUMBER

  
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Registration No. 32,607

Date: February 18, 2004

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Complete if Known

**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Application Number	10/664,979
Confirmation Number	4959
Filing Date	September 22, 2003
First Named Inventor	Yoshiaki SAKATANI
Art Unit	1754
Examiner Name	Unknown
Attorney Docket Number	Q77382

1 of 2

**U.S. PATENT DOCUMENTS**

Examiner Initials*	Cite No. <sup>1</sup>	Document Number		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document
		Number	Kind Code <sup>2</sup> (if known)		
		US 2002-0012628	A1	01/31/2002	Sawabe et al.
		US 2002-0021999	A1	02-21-2002	Sakatani et al.
		US 2002-0051746	A1	05-02-2002	Okusako
		US 2003-0027704	A1	02-06-2003	Sakatani et al.
		US 2003-0161784	A1	08-28-2003	Okusako et al.
		US 2003-0220194	A1	11-27-2003	Sakatani et al.
		US 2003-0236317	A1	12-25-2003	Sakatani et al.
		US 5,011,674		04-30-1991	Yoshimoto et al.
		US 6,013,372	A	01-11-2000	Hayakawa et al.

**FOREIGN PATENT DOCUMENTS**

Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document			Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Translation <sup>6</sup>
		Country Code <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup> (if known)			
		EP	0 666 107	A2	08-09-1995	Ishihara Sangyo Kaisha, Ltd.	
		EP	0 675 086	A2	10-04-1995	Ishihara Sangyo Kaisha, Ltd.	
		EP	1 065 169	A1	01-03-2001	Sumitomo Chemical Co., Ltd.	
		EP	1 095 908	A1	05-02-2001	Sumitomo Chemical Co., Ltd.	
		EP	1 138 634	A1	10-04-2001	Sumitomo Chemical Co., Ltd.	
		EP	1 160 202	A1	12-05-2001	Sumitomo Chemical Co., Ltd.	
		EP	1 174 392	A1	01-23-2002	Sumitomo Chemical Co., Ltd.	
		EP	1 178 011	A1	02-06-2002	Sumitomo Chemical Co., Ltd.	
		EP	1 188 718	A2	03-20-2002	Sumitomo Chemical Co., Ltd.	
		EP	1 199 103	A2	04-24-2002	Sumitomo Chemical Co., Ltd.	
		EP	1 205 244	A1	05-15-2002	Kabushiki Kaisha Toyota Chuo	
		EP	1 219 569	A2	07-03-2002	Sumitomo Chemical Co., Ltd.	

**NON PATENT LITERATURE DOCUMENTS**

Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city, and/or country where published.	Translation <sup>6</sup>
		M. Miyauchi et al., "Reversible wettability control of TiO <sub>2</sub> surface by light irradiation," <i>Surface Science</i> , 511, (2002), pp. 401-407	
		R. Asahi et al., "Visible-Light Photocatalysis in Nitrogen-Doped Titanium Oxides", <i>Science</i> , Vol. 293, 7/13/01, pp. 269-271	
		Shinri SATO, "Photocatalytic Activity of NO <sub>x</sub> -Doped TiO <sub>2</sub> in the Visible Light Region", <i>Chemical Physics Letters</i> , Vol. 123, No. 1,2, 1/3/86, pp. 126-128	

Examiner Signature

Date Considered

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> See Kind Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov), MPEP 901.04 or in the comment box of this document. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST. 3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to indicate here if English language Translation is attached.

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Sheet

2

of

2

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		US			
		US			
		US			

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		Country Code <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup> (if known)			
		EP	1 279 643	A2	01-29-2003	Sumitomo Chemical Co., Ltd.	
		EP	1 285 953	A1	02-26-2003	Ecodevice Laboratory Co., Ltd.	
		FR	2 677 012	A1	12-04-1992	Rhone-Poulenc Chimie	
		JP	10-67516	A	03-10-1998	Saga Pref. Gov.	Abstract
		JP	2000-140636	A	05-23-2000	Sharp Corp.	Abstract
		JP	2001-278627	A	10-10-2001	Sumitomo Chemical Co., Ltd.	Abstract
		JP	2001-96168	A	04-10-2001	Kankyo Devise Kenkyusho YG	Abstract
		JP	2001-98220	A	04-10-2001	Kankyo Devise Kenkyusho YG	Abstract
		JP	2003-171578	A	06-20-2003	Sumitomo Chemical Co., Ltd.	Abstract
		JP	2003-221230	A	08-05-2003	Sumitomo Chemical Co., Ltd.	Abstract
		JP	2003-48715	A	02-21-2003	Sumitomo Chemical Co., Ltd.	Abstract
		JP	62-207718	A	09-12-1987	Taki Kagaku KK	Abstract
		WO	00/10921	A1	03-02-2000	Showa Denko Kabushiki Kaisha	Abstract
		WO	00/18686	A1	04-06-2000	Tao Inc.	Abstract
		WO	01/56928	A1	08-09-2001	Ecodevice Laboratory Co., Ltd.	Abstract
		WO	02/40609	A1	05-23-2002	Ecodevice Laboratory Co., Ltd.	Abstract
		WO	96/29375	A1	09-26-1996	Toto Ltd.	

**NON PATENT LITERATURE DOCUMENTS**

Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city, and/or country where published.	Translation <sup>6</sup>

Examiner Signature		Date Considered	
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<sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> See Kind Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov), MPEP 901.04 or in the comment box of this document. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST. 3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to indicate here if English language Translation is attached.